

IN THE CLAIMS:

Please amend the claims pursuant to 37 C.F.R. 1.121 as follows (see the accompanying "marked up" version pursuant to 1.121). No new matter is added.

1. (Amended) A claw-pole permanent magnet stepping motor, comprising:

a first case unit having a length wherein said first case unit is continuous along its length;

a second case having a length wherein said second case unit is continuous along its length;

said first and said second case units having a total length;

a rotor having at least a first and a second permanent magnet;

said first and said second case units having a shape supporting said rotor;

a third and a fourth arcuate section on each said first and said second case units;

a fifth and a sixth side wall section joining each respective said third and forth arcuate sections in a continuous flattened-oval section about said rotor;

said third and said forth arcuate sections each having a first diameter; and

a ratio of said total length to said first diameter is at least 1:1, whereby said claw-pole permanent magnet stepping motor has a reduced size, eliminates magnetic circuit obstructions, and prevents external flux leakage to allow use with magnetic

devices while providing an adequate rotational torque.

4. (Amended) A claw-pole permanent magnet stepping motor, according to claim 3, wherein:

said fifth and said sixth wall sections each having a planar shape and being closer to said rotor than said third and said fourth arcuate sections; and

said at least first case unit having a flattened-oval cross section, whereby said claw-pole permanent magnet stepping motor has a reduced size.

6. (Amended) A claw-pole permanent magnet stepping motor according to claim 2, further comprising:

a first metal bearing in said first case unit;

a second metal bearing in said second case unit;

said rotor supported between said first and said second metal bearings;

a plurality of magnetic poles on said first and second permanent magnets;

a first and a second phase inductor in each respective said first and said second unit case opposite each respective said first and second permanent magnets;

said first and said second phase inductors disposed symmetrically in each respective said first and said second case units; and

said first and said second phase inductors each formed from at least a first and

a second magnetic plate each including multiple claw-poles and a first and a second coil each with a set of connectors, whereby said adequate rotational torque is created.

7. (Amended) A claw-pole permanent magnet stepping motor, comprising:

a first case unit having a length wherein said first case unit is continuous along its length;

a second case having a length wherein said second case unit is continuous along its length;

a first and a second case unit having a total length wherein a material forming said first and second case units is magnetic;

a rotor having at least a first and a second permanent magnet;

said first and said second case units having an oval shape supporting said rotor;

a third and a fourth arcuate section on each said first and said second case units;

a fifth and a sixth side wall section joining each respective said third and forth arcuate sections in a continuous flattened-oval shape about said rotor;

said third and said forth arcuate sections each having a first diameter;

said total length and said first diameter having a ratio of at least 1:1;

said third and said fourth arcuate sections each have a first thickness;
said fifth and said sixth wall sections each have a second thickness;
said first thickness being greater than said second thickness;
said fifth and said sixth sections each having a planar shape and being closer to said rotor than said third and said fourth arcuate sections;

said at least first case unit having a flattened-oval cross section, whereby said claw-pole permanent magnet stepping motor has a reduced size, eliminates magnetic circuit obstructions, and prevents external flux leakage to allow use with magnetic devices while providing an adequate rotational torque;

a first metal bearing in said first case unit;

a second metal bearing in said second case unit;

said rotor supported between said first and said second metal bearings;

a plurality of magnetic poles on said first and second permanent magnets;

a first and a second phase inductor in each respective said first and said second unit case opposite each respective said first and second permanent magnet;

said first and said second phase inductors disposed symmetrically in each respective said first and said case units; and

said first and said second phase inductors each formed from at least a first and a second magnetic plate each having multiple claw-poles and a first and a second coil each with a set of connectors, whereby said adequate rotational torque is created.

9. (Amended) A claw-pole permanent magnet stepping motor, comprising:

a first case unit having a length wherein said first case unit is continuous along its length;

a second case having a length wherein said second case unit is continuous along its length;

said first case unit and said second case unit having a first total length wherein a material forming said first and second case units is magnetic;

a rotor including a first and a second permanent magnet;

said first and said second case units having an oval shape supporting said rotor;

a permanent magnet magnetized to form a plurality of poles;

said permanent magnet on said rotor;

a first phase inductor;

a second phase inductor;

said first and said second phase inductors disposed symmetrically in each respective said case unit;

said first and said second phase inductors each including at least a plurality of claw poles and a coil;

said first and said second case units having a first diameter; and

a ratio of said first total length to said first diameter is at least 1:1, whereby

said claw-pole permanent magnet stepping motor has a reduced size, eliminates magnetic circuit obstructions, and prevents external flux leakage to allow use with magnetic devices while providing an adequate rotational torque.

12. (Amended) A claw-pole permanent magnet stepping motor, according to claim 11 wherein:

each said first and said second phase inductor includes said coil and a magnetic plate formed integrally from a magnetic material;

each said magnetic plate having an oval shape, including a flat oval-shaped section and an extending plurality of claw-poles, for sliding insertion in each respective said first and said second case unit, whereby assembly time is reduced and efficiency increased.

REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1, 4, 6, 7, 9, and 12 have been amended to particularly point out and distinctly claim the subject matter of the invention. Furthermore, the claims have been amended to claim continuous wall sections along the length of each case unit. Support for this amendment is found in the present specification at, for example, page 13, lines 22-23. Accordingly, claims 1-13 are pending and are at issue.

The Examiner has objected to Applicants' drawings for failure to show